

## **REMARKS**

Claims 1-12 were pending and presented for examination and in this application. In a Final Office Action dated July 21, 2006, claims 1-12 were rejected. Applicants thank Examiner for examination of the claims pending in this application and address Examiner's comments below.

Applicants are adding new claims 13-17 with this Amendment B and Response. Applicants are amending claims 1-12 in this Amendment B and Response. These changes do not introduce new matter, and their entry is respectfully requested. In making these amendments, Applicants have not and do not narrow the scope of the protection to which Applicants consider the claimed invention to be entitled but rather to more clearly define the invention claimed by Applicants.

In view of the Amendments herein and the Remarks that follow, Applicants respectfully request that Examiner reconsider all outstanding objections and rejections, and withdraw them.

### **Response to Rejection Under 35 USC § 112, Paragraph 1**

In the 1<sup>st</sup> and 2<sup>nd</sup> paragraphs of the Final Office Action, Examiner has rejected claims 11 and 12 under 35 USC § 112, ¶ 1 as allegedly containing subject matter not described in the specification in such a way as to reasonably convey to one skilled in the relevant art when the application was filed. These claims have been amended to be fully supported by the specification. Specifically, claims 11 and 12 as amended recite "a processor" and "a

computer usable medium” which were described in paragraphs [0028] and [0039] of the specification as filed in December 10, 2003. Therefore, Applicants respectfully request that Examiner reconsider the rejection, and withdraw it.

**Response to Rejection Under 35 USC 102(b) in View of Hansen**

In the 3<sup>rd</sup> to 8<sup>th</sup> paragraphs of the Final Office Action, Examiner rejected claims 1-12 under 35 USC § 102(b) as allegedly being anticipated by U.S. Patent No. 6,006,318 to Hansen et al. (“Hansen”).

Claim 1 has been amended to now recite:

A method for accessing a plurality of dynamic random access memory (DRAM) devices in parallel, each DRAM device having at least one memory bank, the method comprising:

determining a distribution of data segments of the first and second data words in a plurality of memory banks, the plurality of memory banks being among the memory banks of the plurality of DRAM devices;

**determining a sequence of retrieving the data segments based on the plurality of memory banks;**

retrieving the data segments in parallel from the plurality of memory banks based on the distribution and the sequence; and

**reassembling the retrieved data segments into the first and second data words.**

(Emphasis added)

Thus, claim 1 as amended recites a method that retrieves a first data word and a second data word by determining a sequence based on the memory banks, retrieving data segments based on the sequence, and then reassembling the data segments into the first and second data words. These claimed features are advantageous because they improve the memory access performance. Because the retrieval sequence is determined based on the

memory banks, the data segments of the first and second data words can be retrieved in a sequence tailored to maximize the performance of the memory banks. As a result, the claimed invention may retrieve the data segments in an order inconsistent with the order of the first and second data words. For example, assuming some data segments of the first data word are stored in a memory bank that needs to be precharged before data retrieval and some data segments of the second data word are stored in a memory bank ready for data retrieval, the claimed invention can determine a sequence that retrieves those data segments of the second data word before retrieving those data segments of the first data word, even though the first data word is supposed to be retrieved earlier than the second data word. By not wasting time waiting for the precharge latency overhead, the claimed invention can retrieve data segments faster and then reassemble them into data words, thereby improving the efficiency of the memory banks' usage. Independent claims 11 and 17 as amended similarly recite similar claimed features and have similar benefits.

Hansen does not disclose claim 1 as amended. Specifically, Hansen does not disclose determining a sequence of retrieving the data segments based on the plurality of memory banks, nor does it disclose reassembling the retrieved data segments into data words. Hansen discloses a system for media processing that maintains substantial peak data throughput in the execution and transmission of multiple media data streams. See Hansen, col. 4, ll. 3-13. Examiner cited Figure 13 and col. 19, ll. 16-25 of Hansen to support the rejection. However, the cited section merely discloses a memory interface coupled to four standard memory devices, wherein each standard memory device includes four banks of DRAM. Examiner also cited Figure 14 and col. 19, ll. 31-36 to support the rejection. However, the cited section merely discloses a memory interface supporting interleaving and page mode access, which is

different from the claimed invention. In Hansen, the data segments of the data words are retrieved in the same order as their associated data words. Therefore, Hansen does not determine a retrieval sequence based on the memory banks and does not reassemble the data segments into data words. Therefore, for at least these reasons, claim 1 is patentably distinguishable over the cited reference.

Based on the above Amendment and Remarks, Applicants respectfully submit that for at least these reasons claim 1 is patentably distinguishable over the cited reference. Likewise, claims 11 and 17 are distinguishable over Hansen for the same reasons. Therefore, Applicants respectfully request that Examiner reconsider the rejection, and withdraw it.

As to the dependent claims 2-10 and 12-16, because claims 2-10 and 13-16 are dependent on claim 1, and claim 12 is dependent on claim 11, all arguments advanced above with respect to claim 1 are hereby incorporated so as to apply to claims 2-10 and 12-16.

### **Conclusion**

Applicants have added new claims 13-17 for which Applicants request consideration and examination. Applicants respectfully submit that these are supported by the specification and are commensurate within the scope of protection to which Applicants believe they are entitled.

In sum, Applicants respectfully submit that claims 1 through 17, as presented herein, are patentably distinguishable over the cited references (including references cited, but not applied). Therefore, Applicants request reconsideration of the basis for the rejections to these claims and request allowance of them.

In addition, Applicants respectfully invite Examiner to contact Applicants' representative at the number provided below if Examiner believes it will help expedite furtherance of this application.

Respectfully Submitted,  
RAMESH YARLAGADDA, ET AL.

Date: September 21, 2006

By: /Greg T. Sueoka/

Greg T. Sueoka, Reg. No.: 33,800  
FENWICK & WEST LLP  
801 California Street  
Mountain View, CA 94041  
Phone: (650) 335-7194  
Fax: (650) 938-5200